

1 WHAT IS CLAIMED IS:

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53 A, }
1. An image forming device management
system including:

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a plurality of image forming devices;
a central service station for providing a
10 maintenance service for the image forming devices; and
a communication control unit connected to
each of the image forming devices by a signal line, the
communication control unit connecting one of the image
forming devices to the central service station via a
15 communication network,

wherein each of the image forming devices
comprises message means for outputting a signal line
separation message when the image forming device has no
signal from the central service station or the
20 communication control unit over a predetermined period.

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2. The system according to claim 1,

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4. The system according to claim 1,
wherein each of the image forming devices comprises
detection means for detecting that the image forming
25 device has no signal from the communication control unit

1 over the predetermined period, based on a response of the
image forming device to a polling of the communication
control unit to the image forming device.

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5. The system according to claim 1,
wherein each of the image forming devices includes a
communication interface unit having a terminal connected
10 to the communication control unit, and each of the image
forming devices comprises detection means for detecting
that the image forming device has no signal from the
communication control unit over the predetermined period,
15 based on a detected voltage of the terminal of the
communication interface unit.

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6. The system according to claim 1,
wherein each of the image forming devices includes a
connection detecting circuit having an input connected to
the communication control unit, and each of the image
25 forming devices comprises detection means for detecting

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1 that the image forming device has no signal from the
communication control unit over the predetermined period,
based on an output of the connection detecting circuit.

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7. The system according to claim 1,
wherein the signal line separation message output by the
10 message means indicates a separation of the signal line
between the image forming device and the communication
control unit.

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8. An image forming device management
system including:

a plurality of image forming devices;
20 a central service station for providing a
maintenance service for the image forming devices; and
a communication control unit connected to
each of the image forming devices, the communication
control unit connecting one of the image forming devices
25 to the central service station via a communication

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1 network,

wherein each of the image forming devices
comprises:

5 jam detection means for detecting a jam of
the image forming device;

image formation detection means for
detecting a normal end of image formation by the image
forming device;

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10 remote message means for transmitting a
first remote message through the communication control
unit to the central service station, the first remote
message indicating that the jam of the image forming
device is continuously detected for a predetermined number
of copy sheets before the normal end of image formation by
15 the image forming device is detected; and

remote message inhibition means for
inhibiting the remote message means from transmitting a
subsequent remote message after the transmission of the
first remote message until the normal end of image
20 formation by the image forming device is detected.

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9. An image forming device management

1 system including:

a plurality of image forming devices;
a central service station for providing a
maintenance service for the image forming devices; and

5 a communication control unit connected to
each of the image forming devices, the communication
control unit connecting one of the image forming devices
to the central service station via a communication
network,

10 wherein each of the image forming devices
comprises:

jam detection means for detecting a jam of
the image forming device;

15 image formation detection means for
detecting a normal end of image formation by the image
forming device;

remote message means for transmitting a
remote message through the communication control unit to
the central service station, the remote message indicating
20 that the jam of the image forming device is continuously
detected for a predetermined number of copy sheets before
the normal end of image formation by the image forming
device is detected;

a time counter for outputting a time count
25 indicating a period of the jam of the image forming

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1 device; and

remote message inhibition means for
inhibiting the remote message means from transmitting the
remote message when the time count output by the time
5 counter exceeds a predetermined value.

10 10. The system according to claim 9,
wherein each of the image forming devices further
comprises:

setting means for setting the remote
message inhibition means in one of an ON state and an OFF
15 state; and

time count resetting means for resetting
the time counter to zero when the remote message
inhibition means is set from the OFF state into the ON
state by the setting means.

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11. An image forming device management
25 system including:

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1 a plurality of image forming devices;
a central service station for providing a
maintenance service for the image forming devices; and
a communication device for connecting one
5 of the image forming devices to the central service
station via a communication network,
wherein each of the image forming devices
comprises:

remote message means for transmitting a
10 remote message through the communication device to the
central service station when a maintenance service of the
image forming device is initiated or terminated by a
serviceman; and

a non-volatile memory for retaining a
15 content of a serviceman visit flag, the serviceman visit
flag indicating whether the maintenance service of the
image forming device is initiated or terminated by the
serviceman.

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12. The system according to claim 11,
wherein each of the image forming devices further
25 comprises:

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1 means for transmitting a serviceman request
through the communication device to the central service
station when the image forming device requires a
serviceman service; and

5 request inhibition means for inhibiting
said means from transmitting the serviceman request when
the serviceman visit flag retained by the memory indicates
that the maintenance service of the image forming device
is initiated.

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13. The system according to claim 11,
15 wherein each of the image forming devices further
comprises:

statistical data storage means for storing
statistical data including a continuous jam count output
by a continuous jam counter, a long-period jam time count
20 output by a long-period jam counter, and a door-open time
count output by a door-open time counter; and

means for initializing the statistical data
of the statistical data storage means when the serviceman
visit flag retained by the memory indicates that the
25 maintenance service of the image forming device is

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1 terminated.

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14. The system according to claim 11,
wherein each of the image forming devices further
comprises means for controlling the remote message means
to transmit a remote message indicating an end of the
10 maintenance service, to the central service station when
the remote message means does not transmit the remote
message over a predetermined period after a start of the
maintenance service of the image forming device by the
serviceman.

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15. An image forming device management
20 system including:

a plurality of image forming devices;
a central service station for providing a
maintenance service for the image forming devices; and
a communication device for connecting one
25 of the image forming devices to the central service

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1 station via a communication network,

wherein each of the image forming devices
comprises:

5 receiving means for receiving a non-
resettable copy count and a remote message cycle, both
transmitted to the image forming device by the central
service station through the communication device, the copy
count indicating a predetermined number of copy sheets
with respect to a contract for use of the image forming
10 device, the remote message cycle indicating a frequency at
which the image forming device transmits a remote message
to the central service station;

15 first storage means for storing the copy
count and the remote message cycle received by the
receiving means;

second storage means for storing a current
copy count that is incremented every time an image
formation of one copy sheet is performed by the image
forming device;

20 control means for setting the image forming
device in a remote message enable state when a difference
between the current copy count and the received copy count
reaches an integral multiple of the remote message cycle;
and

25 remote message means for transmitting the

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1 remote message through the communication device to the
central service station after the image forming device is
set in the remote message enable state by the control
means.

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16. The system according to claim 15,
10 wherein the remote message transmitted to the central
service station by the remote message means includes a
remote message purpose and the current copy count.

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17. The system according to claim 15,
wherein the copy count received by the receiving means
indicates a predetermined number of copy sheets at a start
20 of a block billing contract for use of the image forming
device.

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1 18. The system according to claim 15,
wherein the copy count received by the receiving means
indicates a predetermined number of copy sheets at an end
of a block billing contract for use of the image forming
5 device.

10 19. The system according to claim 15,
wherein each of the image forming devices includes an
operational display device, at least one of a copy count
at a start of a block billing contract for use of the
image forming device, a copy count at an end of the block
15 billing contract, and the difference between the current
copy count and the received copy count being displayed on
the operational display device.

20 20. The system according to claim 15,
wherein each of the image forming devices includes an
operational display device, the difference between the
25 current copy count and the received copy count being

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1 displayed on the operational display device.

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21. An image forming device management system including:

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10 a plurality of image forming devices, each of the image forming devices having operating parameters stored in a memory of the image forming device, and absolute addresses of the memory where the respective operating parameters are stored being predetermined according to a kind of each operating parameter;

15 a central service station for reading information from or writing information to the operating parameters of one of the image forming devices by transmitting an access request to said one of the image forming devices; and

20 a communication device for connecting one of the image forming devices to the central service station via a communication network,

wherein the central service station comprises parameter code transmitting means for transmitting a parameter code, indicating a kind of a particular one of the operating parameters, through the
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1 communication device to one of the image forming devices
when transmitting an access request to said one of the
image forming devices, and

5 wherein each of the image forming devices
comprises:

address determination means responsive to
the access request for determining an absolute address of
the memory of the image forming device in accordance with
the parameter code transmitted by said code transmitting
10 means; and

access request processing means for
accessing the particular one of the operating parameters
at the absolute address of the memory determined by the
address determination means.

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22. The system according to claim 21,
20 wherein the image forming devices are of different models,
and share a common parameter code indicating an identical
kind for the operating parameters of the individual image
forming devices regardless of the model of each image
forming device.

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1 23. An image forming device management
system including:

 a plurality of image forming devices;

 a central service station for providing a
5 maintenance service for the image forming devices; and

 a communication device for connecting one
of the image forming devices to the central service
station via a communication network,

 wherein each of the image forming devices
10 comprises:

 first request means for outputting a mode
shift request to the image forming device, the mode shift
request initiating a shift of the image forming device to
a maintenance mode;

15 maintenance mode start means for setting
the image forming device in the maintenance mode in
response to the mode shift request output by the first
request means;

 first remote message means for transmitting
20 a first remote message through the communication device to
the central service station in response to the mode shift
request output by the first request means, the first
remote message indicating a start of a maintenance service
of the image forming device;

25 second request means for outputting a

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1 maintenance end request to the image forming device, the
maintenance end request terminating the maintenance mode
of the image forming device; and

5 second remote message means for
transmitting a second remote message through the
communication device to the central service station in
response to the maintenance end request output by the
second request means, the second remote message indicating
an end of the maintenance service of the image forming
10 device.

15 24. The system according to claim 23,
wherein each of the image forming devices further
comprises remote message inhibition means for inhibiting
the first remote message means from transmitting a remote
message through the communication device to the central
20 service station when a mode shift request is output again
by the first request means after the first remote message
is transmitted by the first remote message means and
before the second remote message is transmitted by the
second remote message means.

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1 25. An image forming device management
system including:
 a plurality of image forming devices;
 a central service station for providing a
5 maintenance service for the image forming devices; and
 a communication device for connecting one
of the image forming devices to the central service
station via a communication network,
 wherein each of the image forming devices
10 comprises:
 first request means for outputting a mode
shift request to the image forming device,
 first display means for displaying a first
mode shift key in response to the mode shift request
15 output by the first request means,
 second request means for initiating a shift
of the image forming device to a maintenance mode when the
first mode shift key displayed by the first display means
is turned ON;
20 maintenance mode start means for setting
the image forming device in the maintenance mode when the
shift of the image forming device to the maintenance mode
is initiated by the second request means;
 first remote message means for transmitting
25 a first remote message through the communication device to

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1 the central service station when the shift of the image
forming device to the maintenance mode is initiated by the
second request means, the first remote message indicating
a start of a maintenance service of the image forming
5 device;

third request means for outputting a
maintenance end request to the image forming device, the
maintenance end request terminating the maintenance mode
of the image forming device; and

10 second remote message means for
transmitting a second remote message through the
communication device to the central service station in
response to the maintenance end request output by the
second request means, the second remote message indicating
15 an end of the maintenance service of the image forming
device.

20 26. The system according to claim 25,
wherein each of the image forming devices further
comprises display inhibition means for inhibiting the
first display means from displaying the first mode shift
25 key when a mode shift request is output again by the first

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1 request means after the first remote message is
transmitted by the first remote message means and before
the second remote message is transmitted by the second
remote message means.

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27. The system according to claim 25,
10 wherein each of the image forming devices further
comprises second display means for displaying a second
mode shift key after the first remote message is
transmitted by the first remote message means, the third
request means outputting the maintenance end request to
15 the image forming device when the second mode shift key
displayed by the second display means is turned ON.

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28. The system according to claim 23,
wherein the communication device is a data communication
device connected to each of the image forming devices, the
data communication device connecting one of the image
25 forming devices to the central service station via a

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1 communication network.

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29. The system according to claim 23,
wherein the communication device comprises a communication
control unit connected to each of the image forming
devices, the communication control unit connecting one of
10 the image forming devices to the central service station
via a communication network.

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